

## 1 CLAIMS

2

3 1. A turnout apparatus for a railway track, the  
4 turnout apparatus comprising a raised track surface  
5 which is adapted to provide a path along which  
6 wheels of a train can travel from one railway track  
7 to another, wherein the raised track surface is of a  
8 sufficient height such that the wheels of the train  
9 are arranged to clear the said railway tracks.

10

11 2. Apparatus according to claim 1, wherein a  
12 crossover comprising a pair of said turnouts is  
13 provided.

14

15 3. Apparatus according to either of claims 1 or 2,  
16 wherein the raised track surface comprises a pair of  
17 rails, each rail further comprising a ramp surface  
18 which is tapered from a short or no height end to a  
19 relatively tall height end.

20

21 4. Apparatus according to claim 3, wherein the  
22 ramp surface comprises a linear taper from the short  
23 or no height end to the relatively tall height end.

24

25 5. Apparatus according to claims 3 or 4, wherein  
26 the relatively tall height end is of the same height  
27 as that of the raised track surface.

28

29 6. Apparatus according to any of claims 3 to 5,  
30 wherein the relatively tall height end of the ramp  
31 surface is adjacent to an end of the raised track  
32 surface, the two combining to provide a path along

1     which the wheel is permitted to travel whilst  
2     maintaining a substantially equal distance between a  
3     pair of raised rails, which combined, form the  
4     raised track surface.

5  
6     7.   Apparatus according to any of claims 3 to 6,  
7     wherein the ramp surface comprises a ramp for each  
8     rail, where both ramps incline simultaneously,  
9     avoiding differential levels, in relation to the  
10    respective rails of the said railway tracks.

11  
12    8.   Apparatus according to any of claims 3 to 6,  
13    wherein at least a portion of each rail of the  
14    raised track surface comprises a slot formed  
15    therein.

16  
17    9.   Apparatus according to claim 8, wherein the  
18    slot is formed below a rail head portion, wherein  
19    the slot is arranged to lie over or around the rail  
20    of the said railway track being crossed and the rail  
21    head portion is releasably fixed to the said rail  
22    being crossed.

23  
24    10.   Apparatus according to any of claims 1 to 7,  
25    wherein at least a portion of each rail of the  
26    raised track surface comprises a railhead portion  
27    arranged to lie over or around a supporting member.

28  
29    11.   Apparatus according to claim 10, wherein the  
30    supporting member is arranged to lie over or around  
31    the rail of the said railway track being crossed.

32

- 1     12. Apparatus according to either of claims 10 or  
2     11, wherein the supporting member comprises a  
3     longitudinal axis which is arranged parallel to a  
4     longitudinal axis of the said rail of the railway  
5     track.  
6
- 7     13. Apparatus according to any of claims 10 to 12,  
8     wherein the supporting member comprises at least an  
9     upper supporting member and at least a lower  
10    supporting member.  
11
- 12    14. Apparatus according to claim 13, wherein the  
13    upper supporting member is planar.  
14
- 15    15. Apparatus according to either of claims 13 or  
16    14, wherein an upper surface of the upper supporting  
17    member is attached to at least a portion of a lower  
18    surface of the raised track.  
19
- 20    16. Apparatus according to any preceding claim,  
21    wherein at least a portion of the raised track  
22    surface is supported by the said rail of the railway  
23    track being crossed and a fixing means.  
24
- 25    17. Apparatus according to claim 14 or to either of  
26    claims 15 or 16 when dependent upon claim 14,  
27    wherein the upper supporting planar member is  
28    substantially wider than the said rail of the  
29    railway track being crossed.  
30

1 18. Apparatus according to claim 17, wherein the  
2 upper supporting planar member comprises a  
3 rectangular plate member.  
4

5 19. Apparatus according to claim 13 or to any of  
6 claims 14 to 18 when dependent upon claim 13,  
7 wherein a pair of guide means are provided along at  
8 least a portion of the upper supporting member's  
9 length.  
10

11 20. Apparatus according to claim 19, wherein the  
12 guide means run parallel to the upper supporting  
13 member's longitudinal axis, and project downwardly  
14 in order, in use, to straddle the said rail of  
15 railway track being crossed.  
16

17 21. Apparatus according to claims 13 or to any of  
18 claims 14 to 20 when dependent upon claim 13,  
19 wherein a pair of lower supporting members are  
20 provided at either side of at least a portion of the  
21 said rail of the railway track being crossed.  
22

23 22. Apparatus according to claim 21, wherein the  
24 pair of lower supporting members combine to provide  
25 a substantially similar shape, width and position  
26 along the said rail of the railway track being  
27 crossed as the upper supporting member, and are  
28 adapted to be releasably engaged thereto and  
29 releasably fixed thereto.  
30

31 23. Apparatus according to claim 14 or to any of  
32 claims 15 to 22 when dependent upon claim 13,

1 wherein a lower surface of the upper supporting  
2 planar member lies on top of an uppermost surface of  
3 the lower supporting members.

4  
5 24. Apparatus according to any preceding claim,  
6 wherein at least a portion of the raised track  
7 surface is formed on top of a rail head portion,  
8 wherein the height of a crossover member of the  
9 raised track surface at least equals the depth of a  
10 flange portion of the wheel of the train.

11  
12 25. Apparatus according to any preceding claim,  
13 wherein the raised track surface comprises a  
14 plurality of rail members, one or more of which  
15 comprise a curved radius away from one of the  
16 railway tracks towards the other railway track.

17  
18 26. Apparatus according to claim 25, wherein the  
19 plurality of rail members combine to form a turnout  
20 having a substantially continuous rail surface and  
21 includes the following components:-

22 a ramp member adapted to raise the train wheel  
23 to the raised height;

24 a curved radius rail adapted to urge the train  
25 away from one of the railway tracks towards the  
26 other railway track;

27 a substantially straight rail adapted to  
28 transfer the train from the curved radius rail of  
29 one track toward the other track; and

30 a crossover rail adapted to allow the train to  
31 pass over the inner rails of the first and second  
32 existing railway tracks at the raised height.

1     27. Apparatus according to any preceding claim,  
2     wherein at least a portion of the raised track  
3     surface is supported in the lateral and/or vertical  
4     direction at a plurality of locations along its  
5     length by a support device.

6  
7     28. Apparatus according to claim 27, wherein the  
8     support device comprises a plurality of pot sleeper  
9     arrangements.

10  
11    29. Apparatus according to any preceding claim,  
12    wherein the one or more turnouts are temporary  
13    turnouts.

14  
15    30. Apparatus according to any preceding claim,  
16    wherein the one or more turnouts are non-intrusive  
17    turnouts.

18  
19    31. A method of allowing normal running of a train  
20    along one of a first and second existing railway  
21    track(s), having a crossover installed, in  
22    accordance with claim 2 or any of claims 3 to 30  
23    when dependent upon claim 2, comprising;

24        removing one or more sections of the crossover  
25        from engagement with the said one of the first and  
26        second existing railway track(s), such that the  
27        train does not travel onto the other of the said  
28        first and second existing railway tracks.

29  
30    32. A method according to claim 31 further  
31    comprising;

1           leaving in place a second portion of the raised  
2   track surface, and at least a lower supporting  
3   member.  
4

5   33. A method of transferring a train from one  
6   railway track to a second railway track, the method  
7   comprising the steps of:-

8           providing a raised track surface which is  
9   adapted to provide a path along which wheels of the  
10   train can travel from the first to the second  
11   railway track;

12           passing the train along the first track and  
13   onto the raised track surface, wherein the raised  
14   track surface is of a sufficient height such that  
15   the wheels of the train are arranged to clear at  
16   least one of the first and second railway tracks.  
17

18   34. Apparatus for facilitating Single Line Working  
19   on a second railway track to clear a first railway  
20   track for maintenance or other purposes, the  
21   apparatus comprising a first non-intrusive crossover  
22   and a second non-intrusive crossover being spaced  
23   apart from the first non-intrusive crossover in the  
24   direction of the longitudinal axis of the pair of  
25   railway tracks, and which provide a path along which  
26   wheels of a train can travel from the first to the  
27   second railway track and from the second to the  
28   first railway track.  
29

30   35. Apparatus according to claim 34, wherein the  
31   first and/or second non-intrusive crossover comprise  
32   a raised track surface.

1     36. Apparatus according to claim 35, wherein the  
2     raised track surface is provided with a supporting  
3     means to support the passage of trains.  
4

5     37. Apparatus according to any of claims 34 to 36,  
6     wherein each of the first and second non-intrusive  
7     crossovers comprise a pair of turnouts, and each  
8     pair of turnouts comprise a pair of rails.  
9

10    38. A method which enables Single Line Working on a  
11    second railway track to clear a first railway track  
12    for maintenance by other purposes, the method  
13    comprising the steps of:-

14        providing a first non-intrusive crossover;

15        providing a second non-intrusive crossover at a  
16    location which is spaced apart from the first non-  
17    intrusive crossover in the direction of the  
18    longitudinal axis of the pair of railway tracks;

19        passing the train along the first non-intrusive  
20    crossover;

21        passing the train along the portion of the  
22    second railway track between the first and second  
23    non-intrusive crossover;

24        passing the train along the second non-  
25    intrusive crossover, such that the train is returned  
26    to a location on the first railway track which is  
27    spaced apart in the longitudinal direction from the  
28    first non-intrusive crossover.  
29

30    39. A pot sleeper for supporting a rail of a  
31    railway track, the pot sleeper comprising:-



1           a body having an, in use, substantially planar  
2 upper surface onto which rails may be connected;  
3           front and rear faces which extend downwardly at  
4 an angle to the upper surface, the faces having  
5 lower contact edges for contact with the ground; and  
6           a pair of side ends which extend downwardly at  
7 an angle to the upper surface for a greater distance  
8 than the front and rear faces.

9  
10       40. A pot sleeper according to claim 39, wherein  
11 said lower contact edges have a greater surface area  
12 than the cross-sectional area of the front and rear  
13 sides.

14  
15       41. A pot sleeper according to either of claims 39  
16 or 40, wherein the front and rear faces combine with  
17 the upper surface to form an, in use, inverted 'U'  
18 shaped body, whilst the pair of side ends combine to  
19 close the longitudinal axis of the 'U' shaped body.

20  
21       42. A pot sleeper according to claims 39 to 42,  
22 wherein the body is hollow which is adapted to be at  
23 least partially filled with a filling material.

24  
25       43. A pot sleeper according to claims 39 to 42,  
26 wherein the upper surface is provided with a  
27 coupling mechanism to permit coupling of the pot  
28 sleeper to a rail.

29  
30       44. A pot sleeper according to claims 39 to 43,  
31 wherein a connection mechanism is provided to couple  
32 a first to a second respective pot sleeper, where

1 the connection mechanism includes a substantially  
2 rigid member which extends therebetween.

3

4 45. A pot sleeper according to claim 44, wherein  
5 the substantially rigid member is arranged to pass  
6 underneath the rails of an existing railway track.

7

8 46. A method of installing and/or maintaining a pot  
9 sleeper according to any of claims 39 to 45 in  
10 ground ballast comprising;

11 driving the pot sleeper into the ground ballast  
12 by mechanical vibrating mechanism means.

13

14 47. A method of installing and/or maintaining a pot  
15 sleeper in ground ballast according to claim 46  
16 comprising;

17 inserting further ballast or other material  
18 into the hollow body of the pot sleeper to at least  
19 establish the height of the pot sleeper, in use.

20